

FILE TREE2

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/1 SUITE : PCB LAYOUT
/2 PROGRAM TITLE : REDAL 20
/3 ROUTINE TITLE : TREE2

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/ CUSTOMER; THE CONTENTS OR DETAILS OF ITS OPERATION MAY ONLY
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/ A KNOWLEDGE OF THE SOFTWARE CODING TO CARRY OUT THEIR JOB.
/ DISCLOSURE TO ANY OTHER PERSON MUST HAVE THE PRIOR AUTHORISATION
/ FROM THE DIRECTORS OF REDAC SOFTWARE LIMITED.

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/6 PURPOSE: TO BUILD A TREE ON A SPECIFIED PAD OF A SPECIFIED
/ MINIMUM WIDTH.

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/7 CALLING SEQUENCE AND DESCRIPTION OF ARGUMENTS:
/ CALL TREE2 (PP(1),ANTINODE,NO)
/ PP(1) CONTAINS THE NODE ON WHICH THE TREE IS TO BE GROWN
/ ALSO CONTAINS MINIMUM WIDTH ALLOWED ON THAT TREE.
/ ANTINODE CONTAINS NODE WHICH IS NOT REQUIRED ON TREE.
/ NO ON ENTRY MAXIMUM NO OF POINTS ALLOWED ON TREE
/ ON EXIT NO OF POINTS STORED ON TREE (IN PP ARRAY)

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/9 REGISTERS USED: AC,MQ,IX,AIR10

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/10 COMMON AREAS: COMPS,CONNX,TRAKAD,ROUTE

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/12 GLOBALS: TREE2,.DA

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/ *** AMENDED JUNE 1975 BY MIKE FELLOWS TO OUTPUT A
/ *** WARNING WHEN ONE TREE CONSISTS OF > 300 NODES.
/ *** THIS AMENDMENT DENOTED AS AMDT 1

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.IODEV -3 / AMDT 1
.GLOBL TREE2,.DA
COMPS .CBD COMPS 1
CONNX .CBD CONNX 1
TRAKAD .CBD TRAKAD 1
ROUTES .CBD ROUTE 1
TREE2 XX
JMS* .DA
JMP ..+1+3
SCAN1 0
NOTTT 0

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00000 R 000000 A
00001 R 000000 A
00002 R 000000 A
00003 R 000000 A
00004 R 740040 A
00005 R 120236 E
00006 R 600012 R
00007 R 000000 A
00010 R 000000 A

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PAGE	2	TREE2	SRC	TREE2
53		00011	R 000000 A	NTREE 0
54		00012	R 220001 R	LAC* CONNX
55		00013	R 040227 R	DAC CONNAD*
56		00014	R 220000 R	LAC* COMPS
57		00015	R 040175 R	DAC COMPAD
58		00016	R 220007 R	LAC* SCAN1
59		00017	R 640506 A	LRS 6
60		00020	R 500237 R	AND (7
61		00021	R 040235 R	DAC WIDTH* / SPECIFIED MIN BRANCH WIDTH IN THOU
62		00022	R 220007 R	LAC* SCAN1
63		00023	R 500240 R	AND (777077
64		00024	R 060007 R	DAC* SCAN1 / CLEAR WIDTH OPTION FOR OUTPUT ARRAY
65		00025	R 200007 R	LAC SCAN1
66		00026	R 340241 R	TAD (1
67		00027	R 040234 R	DAC SCAN2*
68		00030	R 340242 R	TAD (-2
69		00031	R 040225 R	DAC BASE* / ADDR OF PP(0)
70		00032	R 200176 R	LAC MAXTRE /AMDIT 1
71		00033	R 740031 A	TCA /AMDIT 1
72		00034	R 040230 R	DAC MAXX* / MAX PERMISSABLE TREE SIZE
73		00035	R 200241 R	LAC (1
74		00036	R 060011 R	DAC* NTREE / NO OF WORDS IN TREE
75		00037	R 220007 R	TREER LAC* SCAN1
76		00040	R 500243 R	AND (77
77		00041	R 040232 R	DAC PIN* / PAD NUMBER
78		00042	R 220007 R	LAC* SCAN1
79		00043	R 744000 A	CLL
80		00044	R 640510 A	LRS 10 / SHIFT 9 THEN*2
81		00045	R 040233 R	DAC PNTR*
82		00046	R 744010 A	RCL
83		00047	R 340233 R	TAD PNTR /*6
84		00050	R 340175 R	TAD COMPAD
85		00051	R 040233 R	DAC PNTR
86		00052	R 220233 R	LAC* PNTR
87		00053	R 741200 A	SNA
88		00054	R 620004 R	JMP* TREE2 / NO CONNS
89		00055	R 340227 R	TAD CONNAD
90		00056	R 340244 R	TAD (-1
91		00057	R 140233 R	DZM PNTR / POINTER TO CONNEXIONS (REL)
92		00060	R 721000 A	PAX
93		00061	R 230233 R	LAC* PNTR.X
94		00062	R 500245 R	AND (777
95		00063	R 740031 A	TCA
96		00064	R 040231 R	DAC NOFCNS* / -NO OF CONNS
97		00065	R 440233 R	LUPCC ISZ PNTR
98				/
99				/ CHECK WIDTH OF CONNEXION
100				/
101		00066	R 230233 R	LAC* PNTR.X
102		00067	R 640506 A	LRS 6
103		00070	R 500237 R	AND (7
104		00071	R 740001 A	CMA

PAGE	3	TREE2	SRC	TREE2
105		00072 R	340235 R	AND WIDTH
106		00073 R	740100 A	SMA
107		00074 R	600124 R	JMP YES-2 / BRANCH IS TOO THIN
108		00075 R	230233 R	LAC* PNTR,X
109		00076 R	500243 R	AND (??
110		00077 R	540232 R	SAD PIN
111		00100 R	600126 R	JMP YES / CONN TO CORRECT PIN
112				/
113				/ CHECK FOR SELF CONNEXION
114				/
115		00101 R	230233 R	LAC* PNTR,X
116		00102 R	260007 R	XOR* SCAN1
117		00103 R	500246 R	AND (??7000
118		00104 R	740200 A	SZA
119		00105 R	600124 R	JMP YES-2 / NOT SELF CONNEXION
120		00106 R	440233 R	ISZ PNTR
121		00107 R	230233 R	LAC* PNTR,X
122		00110 R	500243 R	AND (??
123		00111 R	540232 R	SAD PIN
124		00112 R	741000 A	SKP
125		00113 R	600160 R	JMP ENDL / NOT TO CORRECT PIN
126				/
127				/ SELF CONN AND ON TREE
128				/
129		00114 R	200233 R	LAC PNTR
130		00115 R	340244 R	TAD (-1
131		00116 R	040233 R	DAC PNTR
132		00117 R	230233 R	LAC* PNTR,X
133		00120 R	500240 R	AND (??7077 / GET PACKED POINTER AND PAD
134		00121 R	060234 R	DAC* SCAN2
135		00122 R	440233 R	ISZ PNTR
136		00123 R	600136 R	JMP YES2
137		00124 R	440233 R	ISZ PNTR
138		00125 R	600160 R	JMP ENDL / NOT TO CORRECT PIN
139		00126 R	230233 R	YES LAC* PNTR,X
140		00127 R	500246 R	AND (??7000 / REL PTR TO OTHER COMP
141		00130 R	652000 A	LMQ / IN MQ
142		00131 R	440233 R	ISZ PNTR
143		00132 R	230233 R	LAC* PNTR,X
144		00133 R	500243 R	AND (??
145		00134 R	640002 A	OMQ / PACK POINTER AND PAD NO
146		00135 R	060234 R	DAC* SCAN2
147		00136 R	560010 R	YES2 SAD* NOTTT / CHECK ANTINODE
148		00137 R	600160 R	JMP ENDL
149				/
150				/ NEW POINT IS NOW STORED (TEMPORARILY) IN SCAN2* ,NOW
151				/ SCAN THE PP ARRAY UP TO SCAN2 AND CHECK FOR EQUALITY
152				/ IF NONE ARE EQUAL UPDATE SCAN2
153				/
154		00140 R	200225 R	LAC BASE / ADDR OF PP(0)
155		00141 R	060247 R	DAC* (10 / AUTO INDEX REG TO SCAN
156		00142 R	220011 R	LAC* NTREE

PAGE	4	TREE2	SRC	TREE2
157		00143	R 740001 A	CMA
158		00144	R 340241 R	TAD (1
159		00145	R 040226 R	DAC CNTR* / -NO OF WORDS IN PP
160		00146	R 220010 A	SLOOP LAC* 10
161		00147	R 560234 R	SAD* SCAN2
162		00150	R 600160 R	JMP ENDL / EQUALITY
163		00151	R 440226 R	ISZ CNTR
164		00152	R 600146 R	JMP SLOOP
165		00153	R 440234 R	ISZ SCAN2 / NOT EQUAL. THEREFORE UPDATE
166		00154	R 460011 R	ISZ* NTREE / UPDATE WORD COUNT
167		00155	R 440230 R	ISZ MAXX
168		00156	R 741000 A	SKP
169		00157	R 600170 R	JMP ERROR /AMDT 1
170				/
171		00160	R 440233 R	ENDL ISZ PNTR
172		00161	R 440231 R	ISZ NOFCNS / SKIP IF ALL CONNS CHECKED
173		00162	R 600065 R	JMP LUPCC
174		00163	R 440007 R	ISZ SCAN1 / UPDATES POINTER
175		00164	R 200007 R	LAC SCAN1
176		00165	R 540234 R	SAD SCAN2 / CHECK FOR END
177		00166	R 620004 R	JMP* TREE2 / ALL PTS ON TREE FOUND
178		00167	R 600037 R	JMP TREER / CONTINUE
179		00170	R	ERROR .WRITE -3,2,MESS,34 /AMDT 1
		00170	R 002775 A *G	CAL+2*1000 -3&777
		00171	R 000011 A *G	11
		00172	R 000177 R *G	MESS
			*G	.DEC
		00173	R 777736 A *G	-34
180		00174	R 620004 R	JMP* TREE2 /AMDT 1
181		00175	R 000000 A	COMPAD 0
182		00176	R 000455 A	MAXTRE 455 / OCTAL VALUE FOR 301 : AMDT 1
183		00177	R 002002 A	MESS 2002; 0; .ASCII /WARNING: MAXIMUM NO. OF NODES PER/
		00200	R 000000 A	
		00201	R 536032 A	
		00202	R 247222 A	
		00203	R 472167 A	
		00204	R 220232 A	
		00205	R 406611 A	
		00206	R 146652 A	
		00207	R 465011 A	
		00210	R 647534 A	
		00211	R 202370 A	
		00212	R 620234 A	
		00213	R 476110 A	
		00214	R 551500 A	
		00215	R 502130 A	
		00216	R 200000 A	
184		00217	R 202512 A	.ASCII / TREE = 300/<15>
		00220	R 242612 A	
		00221	R 201724 A	
		00222	R 031540 A	
		00223	R 300320 A	

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00224 R 000000 A
      000000 A .END
00236 R 000236 E *E
00237 R 000007 A *L
00240 R 777077 A *L
00241 R 000001 A *L
00242 R 777776 A *L
00243 R 000077 A *L
00244 R 777777 A *L
00245 R 000777 A *L
00246 R 777000 A *L
00247 R 000010 A *L
      SIZE=00250
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NO ERROR LINES

BASE	00225	69	154						
CNTR	00226	159	163						
COMPAD	00175	57	84	181*					
COMPS	00000	44*	44	56					
CONNAD	00227	55	89						
CONNX	00001	45*	45	54					
ENDL	00160	125	138	148	162	171*			
ERROR	00170	169	179*						
LUPCC	00065	97*	173						
MAXTRE	00176	70	182*						
MAXX	00230	72	167						
MESS	00177	179	183*						
NOFCNS	00231	96	172						
NOTTT	00010	52*	147						
NTREE	00011	53*	74	156	166				
PIN	00232	77	110	123					
PNTR	00233	81	83	85	86	91	93	97	101
		108	115	120	121	129	131	132	135
		137	139	142	143	171			
ROUTES	00003	47*							
SCAN1	00007	51*	58	62	64	65	75	78	116
		174	175						
SCAN2	00234	67	134	146	161	165	176		
SLOOP	00146	160*	164						
TRAKAD	00002	46*	46						
TREER	00037	75*	178						
TREE2	00004	1	43	48*	88	177	180		
WIDTH	00235	61	105						
YES	00126	107	111	119	139*				
YES2	00136	136	147*						
YESA	00236	43	49						